TYZZER'S DISEASE IN SNOW LEOPARDS

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INTRODUCTION

Tygger's disease, due to the intracellular bacterium Bacillus piliformis, has been reported in numerous laboratory and domestic animals (Carlton and Hunt, 1978; Fujiwara, 1978) and the lesions, which are similar regardless of species, have been thoroughly described. Tygger's disease has also been seen in some wild animals, including muskrats (Chalmers and MacNeill, 1977; Woebeser, Hunter and Daoost, 1978), grey foxes (Stanley, Flatt and Daniels, 1978), coyotes (Marler and Cook, 1976), and a lesser panda (Bonney and Schmidt, 1975).

This paper is the first record of Tygger's disease in snow leopard kittens in a zoological collection.

MATERIALS AND METHODS

Five snow leopard kittens in 2 different litters were apparently healthy when born, but became listless, anorexic and developed diarrhea within a few days after birth. Despite antibiotic and supportive therapy, all the kittens died within 2 to 14 days. The kittens were necropsied and representative pieces of most organs were fixed in 10 per cent neutral, buffered formalin and processed by standard methods to paraffin sections. Sections were stained with haematoxylin and eosin (HE), and selected sections were stained by the Giemsa method. Bacterial cultures were obtained from the peritoneal cavity of one and from the small intestine of another of the 3 kittens in the second litter.

RESULTS

Two kittens in the first litter had been dead for some time when necropsied and autolytic changes were advanced. Tissue from one of these animals was examined and multifocal hepatic necrosis was seen. No organisms were noted in Giemsa-stained sections.

All 3 kittens in the second litter had similar lesions. They had abdominal distension, and the mucous membranes were pale. Grossly, the livers were pale and mottled, with yellow-white foci scattered throughout (Fig. 1). The centres of many of these foci were dark red. The gastro-intestinal tracts of all 3 animals were essentially empty, but gross evidence of inflammation was not

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seen. One kitten had 2 to 3 ml of a grey, slightly viscid material in the peritoneal cavity.

Histologically, the liver had multifocal necrotic areas with minimal inflammatory exudate at their peripheries (Fig. 2). Bundles of long rod-like bacteria were seen within hepatocytes at the edge of the necrotic areas. Necrosis of crypt epithelium was seen in the ileum and large intestine of the kittens. Necrosis of the tunica muscularis was noted in the large intestine of one kitten and organisms were seen within cells in the necrotic areas.

*Klebsiella pneumoniae* was cultured from the peritoneal fluid in 1 kitten and *Salmonella enteritidis*, ser. Heidelberg was cultured from the small intestine of one of the others.

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Fig. 1. Liver from snow leopard kitten showing diffuse pale mottling and some discrete pale foci with dark centres (arrows).

Fig. 2. Focal hepatic necrosis in a snow leopard kitten. HE ×60.
DISCUSSION

Of 5 snow leopard kittens from 2 different litters that died within 14 days of birth, 3 had hepatic and enteric lesions morphologically indistinguishable from those caused by \textit{B. piliformis}, while 2 others had lesions suggestive of Tyzzer's disease. Tyzzer's disease has been seen in domestic cats (Kovatch and Zebarth, 1973; Kubokawa, Kubo, Takasaki, Oghiso, Lee, Gatro, Takasaki and Fujiwara, 1973), primarily affecting the liver and small intestine. The disease in these snow leopards appears to be morphologically the same as that reported in domestic cats. The peritonitis present in one of the kittens in the second litter undoubtedly acted as an additional stress. The significance of the salmonella recovered from another kitten is not known, since lesions consistent with salmonella infection were not present except in the intestine, and the intestinal changes could have been entirely caused by \textit{B. piliformis}. Tyzzer's disease has been previously reported from the same zoo (Bonney and Schmidt, 1975) with a lapse of 8 years between cases. Whether the bacteria remained in the zoo environment or were reintroduced was not determined. Our experience with the previous case, and the present limited outbreak, indicates that animals in zoological collections can be affected, and we believe that the host range is potentially as wide as that in domestic animals.

SUMMARY

Tyzzer's disease was diagnosed histologically in 2 litters of newborn snow leopard kittens. The gross and histological lesions were similar to those reported in domestic cats and other animals. No signs of illness was noted in either of the snow leopard dams.

REFERENCES


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